

**REMARKS**

**Status of the claims:**

With the above amendment, claims 8-9 have been amended and claims 11 and 12 have been added. Claims 1-12 are pending and ready for further action on the merits. No new matter has been added by way of the above amendment. The amendment to claim 8 has support at page 4, lines 16-18. The amendment to claim 9 has support at page 4, last line to page 5, line 1. Support for new claim 11 can be found at page 7, lines 4-5. Support for new claim 12 can be found at page 14, lines 9-11 and the other examples. Reconsideration is respectfully requested in light of the following remarks.

**Double Patenting**

Claims 1-10 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-8 of U.S. Patent No. 6,300,387 B2. Attached to this reply, please find a terminal disclaimer disclaiming the terminal portion of any patent term which may arise from the instantly pending application. Withdrawal of the rejection is warranted and respectfully requested.

**Rejections under 35 USC §112, first paragraph**

Claims 9-10 have been rejected under 35 USC §112, first paragraph as allegedly lacking description and enablement.

The Examiner asserts that there is no support in the specification for the language "wherein the molding composition is a solid resin having a softening point of 80°C to 130°C" in claim 9. Applicants have amended claim 9 to recite "wherein component (B) has a softening point of 80°C to 130°C", which has support at page 4, last line to page 5, line 1. Withdrawal of the rejection is warranted and respectfully requested.

The Examiner also asserts that the claims are not enabled for the use of this phrase. It is believed with the above-enumerated amendment, that the invention as claimed can be made and used without undue experimentation. Withdrawal of the rejection is warranted and respectfully requested.

**Rejections under 35 USC §112, second paragraph**

Claims 1-7 have been rejected under 35 USC §112, second paragraph as being indefinite. The Examiner asserts that the recited "substantially free of ethylenically unsaturated group-containing monomers" is indefinite as it is unknown what is the

scope of the word "substantially". This rejection is vigorously traversed for the following reasons.

First, the Examiner's attention is directed to a recent case out of the Court of Appeals for the Federal Circuit entitled *Verve, LLC v. Crane Cams, Inc.*, 65 USPQ2d 1051 (Fed. Cir. 2002). In this case, where there were claims directed to an automotive push rod, rods that had "substantially constant wall thickness" were not rendered indefinite by the nature of the invention, because the usage of the word "substantially" accommodates minor variations that may be appropriate to secure the invention. Moreover, the court found that "substantially" is not indefinite if it serves to reasonably describe subject matter so that its scope would be understood by persons in the field of the invention.

Similarly, Applicants submit that the scope of the instant claims would be understood by those of skill in the field of the invention. This is particularly true in light of the following explanation. In order to prepare the unsaturated polyester, unsaturated dicarboxylic acids (for example, fumaric acid) are used. Any unreacted unsaturated dicarboxylic acids may remain in the preparation. Thus, when Applicants refer to "substantially free of", Applicants refer to these monomers and

not newly added monomers that are added after the preparation of the unsaturated polyester. In other words, there are two types of monomers, the monomers used in the preparation of the polyester and the monomers, such as styrene, which are added after the preparation. Those of skill in the art will readily recognize that in the molding composition art, a polyester "resin" means a monomer composition containing a polyester, styrene and the like.

To support the above supposition, Applicants herein submit a reference from the "ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY" wherein the difference between polyester and polyester resin is described. At page 575, lines 4-6 it is described that "Solutions of these polymers in vinyl monomers, eg. styrene, often are called polyester resins. They are compounded with filler or fibers, of both, in the liquid stage . . ." Thus, one of skill in the art would readily understand the difference between "polyesters" and "polyester resins".

With this difference in mind, one would recognize that it is the added monomer, e.g., styrene that the Applicant of the instant invention want to avoid. Thus, the language "substantially free of ethylenically unsaturated monomers" refers to these added monomers. Accordingly, Applicants submit

that the word "substantially" in this context can be neither considered vague nor indefinite. Withdrawal of the rejection is warranted and respectfully requested.

### **Rejections under 35 USC §103**

Claims 1-10 have been rejected under 35 USC §103(a) as being unpatentable over Hefner '178 (US Patent No. 4,524,178) in view of JP '160 (JP 63 305160).

Claims 1-10 have been rejected under 35 USC §103(a) as being unpatentable over Shibata '326 (US Patent No. 5,077,326) or Wiseman '448 (US Patent No. 5,741,448) alone, or in view of JP '160.

Applicants traverse.

### **Present Invention**

The present invention, as recited in claim 1, relates to a molding composition comprising: (A) an aggregate; at least one of (B) a linear unsaturated polyester and (C) a linear unsaturated polyester polyamide; and (D) a radical generator, wherein each of Component (B) and (C) has a content of an alkylene (having from 2 to 4 carbon atoms) oxide adduct of bisphenol A (average added number of mols: 1 to 10) of 3 to 40

mol% based on an amount of constituent monomers of each of said Components (B) and (C) wherein the composition is substantially free of ethylenically unsaturated group-containing monomers.

**Disclosure of Hefner '178**

Hefner '178 discloses a polyester and polyester-amide alkyds containing no polycycloalkenyl end groups, in admixture with non-resinous vinyl monomers, which are flexibilized by inclusion in the mixtures of about 1 to 20 parts by weight of a polyglycol moiety-comprising, vinyl reactive, urethane oligomer per hundred parts of the alkyd.

Hefner '178 does not teach a composition that is substantially free of ethylenically unsaturated-group containing monomers.

**Disclosure of JP '160**

JP '160 discloses a composition comprising an unsaturated polyester resin containing at least 1/6 mol hydrogenated bisphenol A glycol and a metal salt of stearic acid. The composition contains at least 1/6 mol hydrogenated bisphenol unsaturated polyester per mol resin to retain heat resistance. The composition contains 45-35% wt. % crosslinking agent and 55-65% wt. % polyester.

JP '160 does not teach a composition that is substantially free of ethylenically unsaturated group-containing monomers.

**Disclosure of Shibata '326**

Shibata '326 discloses a curable unsaturated polyester composition with high surface quality that contains an unsaturated polyester, a vinyl monomer, either an alkane polyol polyacrylate or an alkane polyol polymethylacrylate, a thermoplastic resin, and one or more curing catalysts selected from t-butylperoxy benzoate, t-butylperoxy octoate and 2,5-dimethyl-2,5-di(benzoilperoxy) hexane. Molding compounds are obtained by impregnating glass fibers with such composition and molded products obtained by curing such molding material have improved surface smoothness.

**Disclosure of Wiseman '448**

Wiseman '448 discloses a shrink resistant resin composition which is curable at room temperature. The composition contains (a) a curable unsaturated polyester resin, (b) an accelerator, (c) a low temperature free radical peroxide initiator, and (d) a low profile additive comprising polyolefin powder. The resin

composition may be cured at room temperature to provide a molded article, which is said to improve shrink-resistance.

Removal of the Rejections over Hefner '178 in view of JP '160 and over Shibata '326 or Wiseman '448 alone, or in view of JP '160

Hefner '178 in view of JP '160 cannot render obvious the instant invention for the following reasons.

The Examiner alleges that the intended use of the instant invention has no probative value. Applicants respectfully disagree. The intended use will often determine how a composition is made. Thus, a composition that is made for one purpose often will not necessarily be satisfactory for use for another purpose even though the ingredients added to the composition are the same.

As was explained in the response of November 20, 2002, both Hefner '178 and JP '160 relate to molding materials of a "fiber" reinforced resin (hereinafter, the fiber reinforced resin), which is essentially different from the "resin" reinforced fiber (hereinafter, the resin reinforced fiber) of the instant invention.

The fiber reinforced resin is a resin structure in which the strength of the resin is reinforced by formulating fiber or



the like into the resin. In contrast, the resin reinforced fiber is a fibrous structure in which the binding force between the fibers or the like is strengthened by the resin. In other words, the continuous phase of the former is the resin, while the continuous form of the latter is the fiber. More specifically, the former can be used to build, for example, a bathtub, whereas the latter is typically used, for example, the core material in the interior decoration of an automobile.

The methods of manufacturing a fiber reinforced resin and a resin reinforced fiber also differ. The fiber reinforced resin is manufactured by the steps of providing a polyester and a liquid monomer, such as styrene or the like. In manufacturing the fiber reinforced resin, the liquid monomer is essential for dissolving a resin to obtain a putty composition with a high viscosity, in which fibers or a thickener is added. This intermediate is placed in a die and molded and heated to harden it to obtain a desired product such as a bathtub. The intermediate may be used in sheet form (i.e., a sheet molding compound (SMC)). For the Examiner's benefit, please find attached to this response a description about the SMC method described at page 590 in the "ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY". In this description, it can be seen that putty is

spread out to form a compound in sheet form. Alternatively, the intermediate may be used in bulk, rod, or pellet form (called a bulk molding compound (BMC)). IN the BMC process, the putty is used by shaping in a wet process or is shaped like an extruded rod or a pellet using an extruder or a similar instrument.

The SMC process cannot be used to make the molding compounds of the instant invention.

In contrast to the fiber reinforced resin, the resin reinforced fiber is prepared by formulating polyester powder (in which any liquid monomer of ethylenically unsaturated monomer, such as styrene, is not contained) to be solidified at room temperature into fibers, and hardening polyester placed at the intersection of fibers under heat or some similar condition to improve the strength of a fiber board.

At a minimum, the resin to be used should be a compound with low molecular weight, which can be dissolved in a liquid monomer such as styrene. Using this method corresponds to a high softening point of unsaturated polyester as disclosed in the instant invention (and claimed in claim 12).

The methods of manufacturing the resin reinforced fiber composition versus the fiber reinforced resin composition must be kept in mind because one composition provides certain

properties that are superior to the properties disclosed in the other composition, even though there may be overlap between the components in the compositions. Attached to this response, please find a 37 CFR §1.132 declaration signed by Mr. Kuniyasu Kawabe, one of the inventors of the instant invention, wherein he compared the closest composition disclosed in Hefner '178 to the compositions of the instant invention.

By following the procedure enumerated in Hefner '178, Mr. Kawabe found that the instant invention had unexpectedly superior results to the composition disclosed in Hefner '178. In particular, the Examiner's attention is drawn to page 3 of the declaration wherein a table is presented that describes the results from the Hefner '178 reference. The top row wherein a polyester/styrene ratio of 61.3/38.7, which is the closest enabled example in Hefner '178 produced a composition that had a strong smell. When the procedure in Hefner '178 was followed and the amounts of styrene were reduced to levels below the example in Hefner '178, these experiments still produced an unacceptably strong smell (see rows 2-4 of the table). The data in this table should be compared to the almost non-existent smell of the Examples in the instant invention. The smell can be attributed to the presence of the ethylenically unsaturated

monomer styrene. The instant invention does not contain this smell because the instant invention is directed to a composition that is substantially free of ethylenically unsaturated monomers (as claimed in claim 1). Accordingly, for this reason alone, the rejection should be removed.

Further, on page 4 of the declaration, there appears a graph that illustrates the softening point of the polyester disclosed in Hefner '178. The softening point of 58.5°C was unexpectedly inferior to the softening points disclosed in the examples of the instant invention (a softening point of 93°C or greater is claimed in claim 12). Please see the written description for the softening points of the instant invention. Thus, for this reason also, the rejection is inapposite.

However, the Examiner alleges that claim 1 in Hefner '178 discloses 0 parts by weight of an ethylenically unsaturated group containing monomer. See page 5 of the Office Action. Applicants contend that this scenario is not enabled. As described above for the fiber reinforced resin method as disclosed in Hefner '178, one of skill would not be able to make a putty and to shape and harden the intermediate in sheet form using this method. For example, Hefner describes at column 7, lines 54-58

The uncured alkyd/flexibilizer compositions of the invention which do not include vinyl monomers (such as styrene, for example) have utility as intermediate materials which can be mixed with such monomers and cured.

In other words, because Hefner '178 is not enabled for this embodiment, it can not be used as prior art. Please see *In re Lalu and Foulletier*, 223 USPQ 1257 (Fed. Cir. 1984) regarding using an intermediate in an obviousness rejection.

In conclusion, the composition of the instant invention cannot be rendered obvious by Hefner '178 in view of JP '160 because the instant invention has unexpectedly superior results in terms of the lack of smell of the instant invention. This is because the composition of the instant invention is substantially free of ethylenically unsaturated monomers. Withdrawal of the rejection is warranted and respectfully requested.

With respect to the rejection over Shibata '326 or Wiseman '448 alone, or in view of JP '160, the rejections are traversed for the following reasons.

Shibata '326 discloses unsaturated polyesters containing glass fibers and peroxides in Table 1. In column 2, lines 45-47 Shibata '326 discloses Bisphenol A with alkyl oxides (BPA(AO)). Applicants, however, point out that this is one of many possible

diol components that can be used in the unsaturated polyester and there is no indication that BPA(AO) is preferred.

More importantly, in the Examples in Shibata '326 there is described an unsaturated polyester resin A that was synthesized from propylene glycol and maleic anhydride that contains 30 % styrene (see column 4, lines 63-65). From this description, it is evident that the "resin" is a mixture of polyester and monomer. Thus, Shibata '326 does not disclose or suggest a composition that is substantially free of ethylenically unsaturated monomers. The rejection is inapposite. Withdrawal of the rejection is warranted and respectfully requested.

Wiseman '448 relates to the SMC, which is discussed above, which is used by dissolving unsaturated polyester in styrene, or the like. Column 2, line 61 to column 3, line 6 discloses about 30 species of alcohols including AO addition products of BPA. Thus, there is no indication that these are preferred. Further, the Examples use only commercial products wherein it is not explained of what their compositions are composed.

More importantly, at column 3, lines 7-13 in Wiseman '448, it says

*The unsaturated polyester resins are generally crosslinked with a compatible crosslinking monomer such as styrene vinyl toluene, methyl methacrylate, methyl styrene, divinyl*

*benzene, diallyl phthalate and the like. The amount of crosslinking monomer is about 10 percent to about 65 percent, and preferably about 25 percent to about 55 percent by weight of the unsaturated polyester resin.*

Thus, as described above with the other cited references, Wiseman '448 also relates to a resin molding compound essentially comprising a monomer such as styrene. Because Wiseman '448 does not disclose a composition that is substantially free of ethylenically unsaturated monomers, Wiseman '448 cannot render obvious the instant invention. The rejection is inapposite. Withdrawal of all of the rejections are warranted and respectfully requested.

#### Conclusion

With the above remarks and amendments, it is believed that the claims, as they now stand, define patentable subject matter such that a passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) months to April 19, 2003 in which to file a reply to the Office Action. The required fee of \$110.00 is enclosed herewith.

If any questions remain regarding the above matters, please contact Applicant's representative, T. Benjamin Schroeder (Reg. No. 50,990), in the Washington metropolitan area at the phone number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 

John W. Bailey, #32,881

<sup>BS</sup>  
JWB/TBS/bsh

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000





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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims have been amended as follows.

8. (Amended) A molding composition consisting essentially of:

- (A) an aggregate; at least one of
- (B) a linear unsaturated polyester, and
- (C) a linear unsaturated polyester polyamide; and
- (D) a radical generator,

wherein each of Component (B) and (C) has a content of an alkylene (having from 2 to 4 carbon atoms) oxide adduct of bisphenol A (average added number of mols: 1 to 10) of [3 to 50] 8-40 mol% based on an amount of constituent monomers of each of said Components (B) (C).

9. (Amended) A molding composition consisting essentially of:

- (A) an aggregate; at least one of
- (B) a linear unsaturated polyester and
- (C) a linear unsaturated polyester polyamide; and
- (D) a radical generator,

wherein each of Component (B) and (C) has a content of an alkylene (having from 2 to 4 carbon atoms) oxide adduct of bisphenol A (average added number of mols: 1 to 10) of 3 to 40 mol% based on an amount of constituent monomers of each of said Components (B) and (C)

and wherein [the molding composition is a solid resin having]  
component (B) has a softening point of 80°C to 130°C.

New claims 11-12 have been added.